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REPORTED MASCULINITY RATIO IN PAKISTAN: A TRIUMPH OF ANTHROPOLOGY AND ECONOMICS OVER BIOLOGY

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Precis

The unusually high proportion of males over females in the Pakistan population (and three others) have puzzled social scientists and have been subject to considerable debate. Explanations varied from female-selective underenumeration through female-selective mortality, including infanticide and neglect, to biological features.

Hitherto unused data on births reported from recollection have been subjected to analysis with results which suggest that (i) masculinity ratios decrease with age monotonically, and (ii) masculinity ratio increases with parity. Because parity increases with age, the separation of these two influences makes for one of the difficulties of the analysis.

Other human societies behave similarly with regard to (i), but differently with regard to (ii). Because males are the weaker sex, even as foeti, the older the mother the greater her losses of the weaker foeti. Hence the masculinity ratio at birth declines with parity. In Pakistan, apparently, the age influence is not strong enough and the masculinity ratio increases with parity (even if within each parity it decreases with age).

Pakistani mothers like to <u>think</u> that they gave births to more boys than is likely. This influence from the realm of social psychology obtains support at the economic base and jointly they appear to be powerful enough to hide the influence of biology, which presumably is no different in Pakistan from that in other countries.

At some critical turns of the analysis the argument becomes conjectural, especially when female labour force participation and female unemployment are considered in their impact on masculinity ratio. Consequently some of the conclusions are hypothetical. They then call for further analysis and for specialized data collection.

The demographic past of the population of Pakistan is not hewn in stone. Through a maze of uncertainties some features emerge more convincingly than others: the masculinity ratio of the population of all ages increasing up to about 1930 and decreasing thereafter, the high reported masculinity ratio at birth (higher than biologically acceptable) combined with reported high masculinity ratio at early death resulting (improbably) in high masculinity ratio at young ages, female selective underenumeration at marriageable ages for only dimly understood anthropological reasons, high reported masculinity ratio at death resulting (impossibly) in high masculinity ratios at affected age groups, incredibly low labour force participation of females combined with unemployment higher than that of males, especially higher after reproductive ages, indicating the joint, or at least mutual, disappearance of the reproductive and economic role.

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0.0 INTRODUCTION TO THE SEX RATIO

The problem of the sex ratio fascinates social scientists. Some measure it through the masculinity ratio (number of men per woman), others use the feminity ratio (number of women per man). Among the latter is the majority of social scientist on this subcontinent (e.g., Gupta 1970: maps 24, 25, 26 and 27) and in several countries of continental Europe (Petersen 1975: 66, ft 3).[1] Corrado Gini, the celebrated creator of various indices, popular in social sciences, devoted to the topic his very first book (1908). Sex and gender is one of the most important and popular variables, on which a social scientist breaks up his data into significantly different groups.

The balance or imbalance of the sexes on the marriage market is affected by forces that can be summarized by the sex ratio, provided care is taken to combine appropriate age groups.[2] The practice of monogamy acts like a strait-jacket releaved partly by widowhood, divorces and variations in the age at marriage; as well as by polygyny and polyandry, whether simultaneous or consecutive, which in turn contribute to the balances and imbalances on the marriage market.

Sex-selective mortality and sex-selective under and/or overenumeration during a population census add to the interest and difficulty of analysis of data obtained during such a census. Population related phenomena, such as labour force participation, pension rights (unisex life tables),[3] arrangements for old age payment transfers (dependency ratio), family/household creation and demand for housing, as well as more subtle psychological phenomena, do all

depend in one way or another on the sex ratio, and in turn affect it in a variety of ways.

In the community of nations, Pakistan has and had the most extreme sex ratio for its entire historical span of reported demographic data in the form of the highest masculinity ratio ever reported for a large human society for a sustained period of time (for three other countries, but much below Pakistan see El-Badry 1969). The Pakistan reports can be compared with the near-to-uniform masculinity ratio at birth equal to 1050 boys per 1000 girls in all human societies - with possibly two exceptions[4] - and the near-to-uniform male mortality always higher than that of women with Pakistan in apparent breach of both principles. Hence the interest in the phenomenon.

1.0 DATA AVAILABLE IN PAKISTAN

To the tradition of censuses on the Indo-Pakistan subcontinent, long standing and spread over a century, in the last two or three decades a series of demographic surveys has been added, though no progress has been made with the other pillar of demographic data, namely, vital registration. The quality of these data still leaves much to be desired, particularly in the case of the sex ratio, in spite of the century of experience in the case of the censuses and two or three decades in the case of surveys, the latter buttressed with intensive and generous international assistance. Yet, it is still possible to obtain a sex ratio of over 2000 in one age group and less than 500 in a neighbouring age group, while the true figures are probably of the order of, say, 1060 or 1070 (Rukanuddin 1967:184).

1.1 Census reported masculinity ratios

The number of men per 1000 women reported during the nine censuses of the current century are shown in table 1. It will be noted that, with the possible exceptions of age group 60–64 in 1911 and that of $0–4^5$ in 1981, for all age groups shown, the masculinity ratio never dropped below 1000, that is throughout the time surveyed there was and is a reported shortage of women in Pakistan at all ages at all times.

We described the two exceptions of table 1 in the previous sentence as only "possible exceptions", because to those familiar with that type of data it is more realistic to see in an unusual, out-of-step datum an artifact of the collection procedures or the processing techniques, than a real fact of sociodemographic significance. Especially, the low masculinity ratio at ages 0–4 in 1981 cannot be accepted as it stands. The census report describes the phenomenon as "quite unusual" (Pakistan census 1981:20). It is the one age group which should have under any circumstances a masculinity ratio above 1000 because even with male selective mortality it should still carry some of the benefit of the high masculinity ratio at birth of about 1050. It is unlikely in the circumstances of Pakistan that suddenly mortality at these early ages started favouring little girls at the numerical expense of little boys.

Furthermore, age group 0–4 is the locus of another unusual development. Girls aged 0–4 are more numerous than girls aged 5–9 (Pakistan census 1981:22); not by enough to make Pakistan similar to other populations with correctly reported and recorded age distributions. To the best recollection of this writer, that is the first time in the history of censuses in Pakistan that such a beginning of normalisation took place. Boys aged 0–4 are still fewer than boys aged 5–9, an impossible situation census after census and the source of much difficult speculation about the population parameters in Pakistan (e.g.,

TABLE 1

Age specific masculinity ratios in Pakistan from census data: 1901 through 1981

Age group	Average (1931–1981)	1901	1911	1921	1931	1941	1951	1961	1972	1981
All ages		1,179	1,215	1,224	1,223	1,199	1,168	1,159	1,149	1,106
0 - 4	1,024	1,033	1,018	1,007	1,036	1,036	1,045	1,046[2]	1,008	973
5 - 9	1,125	1,137	1,152	1,144	1,170	1,170	1,120[1]	1,110[2]	1,104	1,076
10 - 14	1,243	1,346	1,408	1,369	1,229	1,283	1,107[1]	1,277[3]	1,270	1,184
15 - 19	1,182	1,243	1,329	1,338	1,255	1,168	1,107[1]	1,186	1,201	1,174
20 - 24	1,131	1,155	1,206	1,254	1,194	1,131	1,165	1,129	1,063	1,105
25 - 29	1,176	1,187	1,252	1,283	1,226	1,153	1,356	1,090	1,116	1,117
30 - 34	1,193	1,170	1,186	1,227	1,265	1,289	1,343	1,107	1,081	1,071
35 - 39	1,210	1,288	1,323	1,363	1,310	1,238	1,352[1]	1,175	1,164	1,021
40 - 44	1,188	1,151	1,151	1,159	1,231	1,304	1,234[1]	1,195	1,161	1,005
45 - 59	1,250	1,221	1,341	1,331	1,355	1,345	1,305	1,256	1,229	1,099
50 - 54	1,284	1,199	1,244	1,211	1,302	1,429	1,317	1,296	1,326	1,234
55 - 59	1,206	1,260	1,436	1,395	1,323	1,245	1,082[1]	1,257[2]	1,182	1,144
60 - 64	1,405	988	1,046	1,267	1,401	1,641	1,221[1]	1,326[2]	1,425	1,416
65 - 69	1,349	2,573	2,694	1,443	1,484	1,486	1,200	1,349[2]	1,285	1,287
70 and above	1,320	1,034	1,093	1,286	1,337	1,381	1,117	1,333[2]	1,347	1,402

Sources:

1901–1961: Mohammad Afzal, The population of Pakistan. Paris: Cicred series, 1974.
1972: Pakistan Census Organization, 1979, tables 4A and 4B.
1981: Population Census Organization 1984, table 3.1

1/ These masculinity ratios are 1144, 1061, 1323 and 1170 in table 4.7 of Rukanuddin 1967
2/ These masculinity ratios are 1146, 1334, 1338 and 1324 in table 4.9 of Rukanuddin 1967
3/ This masculinity ratio is 1226 in table 4.7 of Rukanuddin 1967

Krotki, 1963). Why would Pakistan respondents in the 1981 census report their daughters and/or younger sisters more completely and/or put them into the more correct age groups, than they would do so in the case of little boys? What were the socio-psychological or anthropological or economic powers at play that would lead after a century of stubborness towards such lopsided improvements?[6]

The surplus of men in table 1 is particularly noticeable at ages 10-19 and again at older ages. The two surpluses are of a different kind; at older ages the persistence is overwhelming and probably the outcome of female-selective mortality. In this respect Pakistan is different from almost all human societies where male-selective mortality prevails to an increasing extent with advancing age. Table 1 acts almost like a graph with its forest of thousands. There is no other human society that would operate exclusively at thousands for such a length of time at all ages.

The high proportion of reported males aged 10-19 cannot be due to female-selective mortality experienced by girls moving into womanhood. The high proportions of males aged 10-19 repeat themselves census after census and must be an enumeration artifact rather than a reflection of the true demographic situation. The phenomenon is probably due to female-selective underenumeration caused by parental reluctance to report female teenagers at home and the enumerator unwillingness to probe for information not volunteered in the first instance by parental respondents.[7]

If these high masculinity ratios at ages 10-14 (and 15-19) were real and not artifacts of the enumeration process, then, e.g., the relatively numerous men aged 10-14 in 1901 would have emerged again as a high masculinity ratio at ages 20-24 in 1911, at ages 30-34 in 1921 and so on. In fact, it is 20 percent of girls and women aged 10-14 and 15-19 who are missing at each and every census in the form of a "hole" in the age pyramid to re-emerge (as married women?) ten

or twenty years later in age groups 20–29 and 30–39 respectively. An international encyclopedia of population may dismiss the problem by stating airily that the "number of males in Pakistan's population has been higher than the number of females as a result both of higher female mortality and of greater underenumeration of females" (Shah 1982:510). To us the two causes are very different: higher female mortality results in a demographic fact at the relevant ages; underenumeration of females, reinforced by age misstatements, results in a demographic artifact.

1.2 Survey reported masculinity ratio

An extensive and carefully conducted analysis of the 1951 and 1961 data led to the conclusion that one could "reasonably expect that the sex ratio will shortly tend to reach the usual pattern found in other countries" (Rukanuddin 1967:219) seeing that, among other changes, the masculinity ratio in 1951 of 1168 declined to 1159 by 1961. As foreseen by Rukanuddin it declined further by 1972 to 1149 and to 1106 by 1981 (table 1).

There is some consistency in these census reported declines and some confirmation in survey reports. Those reported from the Pakistan Fertility Survey of 1975 seem to be running ahead of the censuses with 1087 (table 2), though the lower masculinity ratio receives support from the three PGS II survey of 1976, 1977 and 1978, only to creep back for the 1981 census into 1106. The low masculinity ratio in 1975 might have been partly caused by the respondents being female. Masculinity ratios from surveys conducted in the 1960s and early 1970s are close to 1150 or similar to the masculinity ratios from the censuses of 1951, 1961 and 1972. Masculinity ratios of the late 1970s are below 1100 or closer to the 1981 value of 1106. There is thus in table 2 an indication that the respondents of Pakistan report themselves consistently with regard to their

TABLE 2

Age specific masculinity ratios in Pakistan from various noncensus sources 1962 through 1978

	PGE				NIS	PGS I				PFS		PGS II	
Age Group	1962	1963	1964	1965	1968	1968	1969	1970	1971	1975	1976	1977	1978
All ages	1145	1149	1155	1154		1138	1145		1144	1087	1087	1083	1079
0 - 4	1035[1]	1070[1]	1075[1]	1104[1]		1086[1]	1108[1]		1132[1]	1084	1064	1060	1065
5 - 9	1109	1092	1052	1129		1119	1143		1139	1093	1083	1085	1073
10 - 14	1271	1270	1271	1248		1202	1234		1240	1087	1177	1172	1172
15 - 19	1226	1319	1366	1356		1177	1501		1204	974	1130	1144	1202
20 - 24	991	936	1034	1016		1051	1048		973	973	948	959	947
25 - 29	989	1075	1065	1055		1097	1030		1021	992	1020	986	937
30 - 34	1074	979	1121	1057		1092	1085		1039	1032	978	989	967
35 - 39	1208	1220	1184	1203		1183	1107		1148	1278	1098	1037	1046
40 - 44	1201	1133	1182	1128		1093	1218		1286	1041	1090	1096	1066
45 - 49	1380	1389	1194	1186		1209	1192		1379	1008	1073	1061	1021
50 - 54	1230	1263	1362	1396		1156	1331		1340	1328[2]	1220	1259	1256
55 - 59	1490	1355	1224	1211		1223	1017		733	-	1035	1072	1075
60 - 64	1422	1519	1320	1333		1509	1433		1467	-	1302	1175	1267
Source	PIDE 1968: 145	PIDE 1968: 159	F&F 1971: 137	F&F 1971: 150-1	TREC 1972	PGS I 1973: 7 de facto	PGS I 1975: 31 de jure		PGS I 1974: 31 de jure	WFS 1976: A.1.3	PGS II 1981: 60-1	PGS II 1983a: 56-7	PGS II 1983b: 60-1

[1] Ages 1-4

[2] Ages 50+

Abbreviations: PGE = Population Growth Estimation experiment
NIS = National Impact Study
PGS = Population Growth Survey
F&F = Farooqui and Farrooq
WFS = World Fertility Survey

sex composition whether to the censuses enumerator or to the survey taker. Table 2 is also useful because it reveals and confirms the three features of the census experiences assembled in table 1: the high reported masculinity ratio for "all ages", though declining since 1931; the high masculinity ratio at ages 10–14 (and 15–19) due to underenumeration of marriageable female teenagers, and thirdly, the high masculinity ratio at older ages due, presumably, to female selective mortality.

The forest of thousands with which we were so impressed in table 1 acting like a graph, is slightly thinner in table 2. The 733 at 55–59 in 1971 can be ignored as an aberration (of the processing procedures?), but the thin line of less than thousands at 20–24, supported to some extent at 25–29 and still less at 30–34 draws attention. Of the 16 cases with less than 1000, one could possibly make three suggestions of "male holes" presumably caused by mobile young men to reappear at older ages. The others look like temporary observations of the kind already referred to. Otherwise there are insufficient grounds to suggest female age misstatements causing low masculinity ratios. We are left to speculate on improvements in female mortality, the kind which will be reflected in some of the empirical curves in figures to be discussed below, curves, which come nearer and nearer with time to the 1000 level.

1.3 Masculinity ratios at birth

Table 3 shows masculinity ratios at birth estimated on the basis of age group 0–4 reported during the censuses of 1951 and 1961 and survived back to their births using four different mortality conditions. It will be noted that the values obtained for the masculinity ratio at birth cluster on both sides of and close to 1050, the value expected on grounds of general human experience.

Depending on how one counts, the eleven surveys shown in table 4 suggest on the average a masculinity ratio at birth of anything between 1090 and 1213. On

TABLE 3

Masculinity ratio at birth in Pakistan
on the basis of ages 0–4 in 1951 and 1961 censuses

Through the application of the reverse survival method using:

	1951	1961	Source[1]
Coale–Demeny regional life tables	1085	1078	p. 154
Indian life tables	1045	1040	p. 156
UN life tables	1063	1031	p. 156
PGE 1962 death rates		1052	p. 157[2]

[1] Source: Rukanuddin 1967: 154, 156, 157

[2] The source cited in the table on p. 157 is puzzling: it refers to a 1961 preliminary census bulletin, which could not possibly contain 1962 PGE data.

the whole, they are ten points higher, that is to say 1150, than what one would expect from a human population, say, 1050.

In table 4 we have masculinity ratios at birth reported in several Pakistan surveys. With one exception, they are obtained from answers to retrospective questions referring to births in the last 12 months. Of the 22 values available in the table, seven are hovering around 1050, 15 are unacceptably high. We, thus, have the confrontation of a near to impossible reported masculinity ratio at birth in table 4 with a realistic calculated (so-called "survived") masculinity ratio at birth in table 3. Presumably, the explanation is that female baby infants could be ignored for the purposes of registration. They could not be ignored so easily as live persons, however, small, tumbling around the house.

The high masculinity ratios at birth have a history behind them; they were not always equally high. In illustrative examples assembled for comparative purposes (Rukanuddin 1967: 149 and 150) they disclose a "pattern of steadily increasing trend in the sex ratio [at birth] from 1901 onwards" (ibid. 151). Some parts of British India did not take part in the increase (e.g., Sind), some others joined it with a vengeance (NWFP: 1220, 1292, 1306, 1353 during the period 1901–1946, ibid. 149). For the period since independence, we have data for Karachi municipality with 1111 (ibid. 150) higher by sixty points than the expected 1050, but less than the PGE–PGS–PFS figures of about 1150.

The discussion of masculinity ratio at birth would not be complete without two considerations being mentioned: the almost legendary preference of Pakistanis for sons and endogenous infant mortality related to the sex of the child. The preference for sons was thought in an earlier study to have an upward effect on fertility, but not on the eventual sex composition of the population (Khan and Sirageldin 1977). A more recent study concluded that

TABLE 4

Masculinity ratios at birth in Pakistan
as reported in various surveys 1962–1978

Name of Survey	Year of Survey	MASC Ratio According to PGE	Source		MASC Ratio	According to	MASC Ratio	Source
(1)	(2)	(3)	(4)		(5)[2]	(6)	(7)	(8)
PGE	1962	1030[1]	P:103		1138	LR	1125	P:106
						CS	1212	108
	1963	1091[1]	110		1168	LR	1163	114
	1964	1107[1]	F:172		1187	LR	1041	F:177
						CS	1055	178
	1965	1055[1]	182	N/A		LR	1104	187
						CS	1038	
PGS I	1968	1186	PGS I 1973:12					
	1969	1137	PGS I 1975:12					
	1970	N/A						
	1971	1076	PGS I 1974:12					
PFS	1975[3]	1048	WFS 1976:A.II.2					
PGS II	1976	1055	PGS II 1981:150					
	1977	1105	PGS II 1983a:146					
	1978	1098	PGS II 1983b:150					
Av. for all 11 surveys		1090					1213	

Abbreviations used:
LR: the longitudinal registration part of the PGE dual estimation system
CS: the cross-sectional survey part of the PGE dual estimation system
P: Source: PIDE 1968
F: Source: Farooqui and Farooq 1971

1 These are the official PGE estimates, so-called Chandra-Deming estimates

2 Source: Rukanuddin 1967:152

3 Births in the last five years to women continuously in the married state

whatever preferences might be expressed they do not translate easily into actual production of sex differences among offsprings (De Tray 1984:197). Sex related infant mortality on the other hand would, of course, affect the sex composition of the population, but we have, as will be seen later, the "wrong" selectivity in mortality. Reported male selectivity in mortality produces reported masculinity in composition, which cannot be.

1.4 Expected age specific masculinity ratios

Of the four mortality schedules used in the previous section and in table 3 for the purposes of "surviving" age group 0–4 back towards their births, two had life expectancies lower for males than females (Coale–Demeny, UN) and two had female selective mortality (India, PGE). Apparently, these distinctions were not fine enough and in consequence they did not interfere with the general message that infants survived back to their births in table 3 came into the world with a masculinity ratio around 1050, as in other human societies, the actual range within which these calculated masculinity ratios at birth placed themselves being 1030 to 1085.

It might nevertheless be interesting to observe the impact of these varying mortality conditions as age specific masculinity ratios in case they throw light on the age specific composition of the Pakistan population, even though they did not interfere with the simplicity of the message concerning the masculinity ratio at birth. This has been done in table 5. In the first three columns age specific masculinity ratios from three sources are shown: obtained in the 1961 census, in the 1962 PGE enumeration and of the 1961 population "survived" through the application of the PGE 1962 mortality conditions, beginning with the masculinity ratio at birth as obtained in section 1.3, namely 1050.

TABLE 5

Age specific masculinity ratios in Pakistan:
1961 census, 1962 PGE, and 1961 expected masculinity ratios
following different regimes of mortality

	1961 census	1962 PGE	The 1961 expected masculinity ratio assuming the following life tables		
			PGE	Indian	European
(1)	(2)	(3)	(4)	(5)	(6)
All ages	1158	1145	1124	1093	986
0–4	1045	1054	1045	1066	1025
5–9	1146	1095	1056	1084	1023
10–14	1226	1252	1058	1091	1024
15–19	1185	1244	1065	1098	1025
20–24	1129	992	1080	1105	1024
25–29	1090	988	1092	1112	1049
30–34	1107	1078	1121	1120	1020
35–39	1175	1205	1113	1126	1016
40–44	1195	1199	1126	1128	1008
45–49	1255	1379	1143	1122	993
50–54	1296	1231	1141	1110	971
55–59	1257	1478	1183	1094	943
60–64	1334	1422	1264	1029	831
65–69	1338	1322			
70+	1329	1252			

Sources: (2) Rukanuddin 1967: 164(6)
(3) PIDE 1968:156&157 derived from
(4) :203(10)
(5) :202(8)
(6) :202(6)

Jumping somewhat ahead of the rest of the argument we turn now to figure 3. In figure 3 the three sets have been plotted (and two others). The phenomenon of underreported females aged 10–19 has been marked F and that of the "returning" females aged 20–29 has been marked G. Both phenomena include a degree of male age misstatements towards youth and female age misstatements towards older ages. If these two areas were to cancel out each other then the three curves would parallel each other and have the same direction from low masculinity ratios (about 1050 in the youngest age) through about 1150 at ages 40 to over 1300 above age 60; the PGE curve lying consistently somewhat below the other two curves.

This last phenomenon means one of two influences or a combination of the two: either women are consistently underreported especially beyond age 35 when the two empirical curves part way with the calculated curve, or the mortality conditions assumed for the 1961 PGE curve are not sufficiently female selective.

There are two other curves in figure 3 based on the last two columns of table 5. They show weak female selectivity, weak in comparison with the 1961 PGE curve. The Indian curve from the age above 45 shows increasingly weak female selectivity (in the country of the disparaged widow and the still recent tradition of sutteel) and the European curve, of course, shows weak female selectivity throughout. These two curves together make us choose female selective mortality as a causative explanation of the Pakistan situation after the age of 40. The 1961 PGE curve alone cannot do the job of explaining the high empirical curves of the 1961 census and the 1962 PGE. Later on we will reinforce our doubts about the validity of the PGE mortality curve. In spite of its high masculinity, it is not sufficiently female selective. Thus, the true PGE reported curve, as distinct from the calculated one, must be lying higher, possibly closer or close to the two empirical curves.

Up to the age 40, once the areas F and G were allowed to look after each other, we do not need to seek an additional explanation: the female selectivity in PGE mortality is of the order of the Indian life table, or actually less to the extent that the 1961 PGE curve lies below the Indian curve at ages less than 40. Beyond age 45 the situation is apparently so grim for Pakistan women that we do not need the additional, even if plausible explanation of female underenumeration.[8]

One could, thus, say that while a substantial proportion of the high masculinity ratios in the Pakistan age pyramid is caused by female selective mortality, the explanation is not powerful enough to do away with all of the anomalies. It is not intended to deal with problems summarized by areas F and G in figure 3 and certainly does nothing to explain the alleged high masculinity ratios at birth, but these have been dealt with in section 1.3.

1.5 Implied vs. reported masculinity ratio at death

In section 1.1 we quoted the authority of an international encyclopedia to the effect that female mortality higher than male prevails in Pakistan. Throughout our discussion we were repeatedly saying, or implying, that even if age misstatements and sex selective underenumeration play a role, outstanding and overwhelming appears to be female selectivity in mortality. One would therefore expect, that were such data available, age specific masculinity ratios at death would be below 1000. Indeed, the PGE survey collected such data and it has been reported that for the years 1962 and 1963 the masculinity ratio at death for all deaths were 890 and 917 respectively (Rukanuddin 1967:184 & 222). One sighs with relief. It is nice to see some bits of data fitting together in these continuing puzzles of inconsistency. Or it would be nice if the information were correct.

In table 6 are assembled masculinity ratios for the four years of the PGE survey. For each year the three component parts of the experiment are shown for "all ages" and for ages 0–4. It will be seen that for the two years cited previously, the masculinity ratio far from being below 1000 is consistently above 1000.[9] We are thus left with the question how can high masculinity ratios at death produce high masculinity ratios among those remaining?

For 1964 the masculinity ratios consistently for all three component parts of the PGE estimation process and for "all ages", as well as for ages 0–4, are below 1000. (For 1965 the record is mixed and will not be taken up in this discussion.) At this point a personal confession is in order. This writer deeply involved with PGE was unhappy with the contradictory results of 1962 and 1963. He put the screws on the cross-sectional survey (CS), which seems to have been the laggard, with the loyal help of the new CS director. The cry went round the two countries: we want more female deaths!!! And we got them. The total number of deaths reported in the CS more than doubled and that of those aged 0–4 also increased substantially (see cols. 4 and 6 in table 6).

In a separate exercise, not reported here today, it has been found that the 1964 masculinity ratios at death ceased showing distinctly Pakistani distortions; that is they became plausible in the light of other bits of Pakistani data; they were nearly exactly what the doctor ordered. The question arises whether this was an accidental outcome of the attention paid to CS; whether with a bit more energy, more sweat, heat and dry dates, more breathing hot air down the necks of CS stalwarts, even lower masculinity ratios could be obtained, implausibly low. One throws one's hands up in despair when the data collected are not so much a reflection of the true demographic situation, but rather the function of energy spent on field work.[10]

TABLE 6

Masculinity ratios at death:
all ages and ages 0–4, Pakistan, 1962–1965

			All ages		0–4		Source
			Masc R	No. of deaths	Masc R	No. of deaths	
(1)		(2)	(3)	(4)	(5)	(6)	(7)
PGE	1962	PGE	1101	7571	1094	4476	PIDE 1968:123
		LR	1060	6836	1084	3997	:128
		CS	1245	4642	1392	2710	:131
PGE	1963	PGE	1052	7757	1036	4687	:134
		LR	1078	6472	1073	4022	:137
		CS	1033	2279	1047	2717	:140
							Farooqui & Farooq 1971
PGE	1964	PGE	941	8274	831	5016	:202
		LR	905	6296	800	3782	:206
		CS	933	5317	783	3267	:209
PGE	1965	PGE	1024	7081	879	3871	:214
		LR	1013	5396	817	2942	:220
		CS	1098	3761	965	1993	:226

2.0 ATTEMPTS AT EXPLANATIONS

Several attempts have been made in the past to explain the unusualness of the sex ratio in Pakistan. It is not an easy discussion, because it cannot be conducted in isolation. It depends on other variables only indirectly related to the sex ratio. For example, an increase in the masculinity ratio could be due to more males, but also to fewer female and either of these phenomena could be created by migration, by changes in the completeness (not coverage) of enumeration, changes in mortality, and so on.[11]

In the case of Pakistan, various attempts have been made to explain away the unusualness of Pakistan's masculinity ratio (e.g., Hashmi 1963, Krotki 1963, Rukanuddin 1967). Among the hypothetical explanations the following were advanced:

i) genetic (biological, racial) characteristics of some or all of the ethnicities inhabiting Pakistan

ii) female selective mortality caused by genetic reasons or sociocultural considerations and practices

iii) female selective underenumeration and under reporting (or male selective overenumeration, etc.)

iv) sexually unbalanced migration.

The first reason can be dismissed for lack of evidence, also intuitively, and because the explanation cannot do the job at the magnitude required by Pakistan anomalies. Such genetic and racial differences as were reported upon from other societies were of the order of 20 or 30 points either way; in Pakistan we need 100 points or more to be explained away.

The second and third reason have been discussed in relevant places of earlier sections and play a major role, but there is uncertainty as to their selective importance. Almost any feature or peculiarity of the masculinity ratio can be explained through either higher female mortality or underreporting or a combination of both and both may well be operating when sociocultural

considerations work through biomedical symptoms. The fourth reason, migration, was never important enough in Pakistan (except, the exchange of populations after partition in 1947). It was only in more recent years that large numbers, even millions, were leaving for the Gulf states, for the United Kingdom and elsewhere. However, with the feeling of belongingness prevailing in Pakistan and with the traditional census practices, absentees are likely to be included in the household listing for a long time to come after they left. During the 1981 census 1.7 million emigrants were reported as having left the country, in the course of the preceding decade or more than 2 percent, and that excludes whole households emigrating with regard to whom nobody was left to report their departure (Pakistan census 1981:38). No age and sex breakdown exists to help in our analysis. To the extent that the emigrants were moles they speeded up the "improvements" in the reported masculinity ratio, i.e., lowered them.

2.1 Sorting out the Pakistan features

It is now time to pull together the threads of the various arguments; and also to separate them analytically. It will be helpful to conduct the argument in three stages. The question of the masculinity at birth is linked with the sex-selectivity of mortality in the first years of life. Then there is the question of sex selectivity in mortality during the next 35 or 40 years of life, subsuming as it does, the underenumeration of (unmarried?) women aged 10-19. Finally, we have the mortality experience of women aged 40 or 45 and above. Each one of these stages has demographic features peculiar to Pakistan and an attempt will be made to explain them through the wider considerations available in social sciences.

The conclusions will be drawn against the background of uncertainty characteristic of the data we are working with.[12] As an example, two most

recent studies report opposite conclusions on Pakistan fertility in the last decade or so, both elegant, high quality, using modern techniques of analysis. One draws attention to the remarkable fact that there has been no change in Pakistan fertility between 1968 and 1975 (De Tray 1984:194); the other reports a decline in the total fertility rate in 1970 of 7.2 children to 6.4 in 1980 (Safilios-Rothschild 1985:42).

2.2 High masculinity ratio at birth and at early death is not true

Taking into account all considerations elucidated previously, the reported high masculinity at birth is an artifact. When older age groups are survived back to age 0, one arrives at around 1050, as one would in almost any other human population. The reported high masculinity ratio at early death is also an artifact. At the order of approximations permitted by the quality of the data available one cannot say that there was no male selectivity of the kind usually found among human populations at youngest ages. The young boys were still there when enumerated, in spite of the alleged exposure to male selective mortality.

More than one reason may be suggested for this contradictory self-reporting by respondents. The birth of a boy, as well as the death of a boy, is apparently more impressive in the anthropological culture of Pakistan society and both get overreported. Secondly, the reported increase in the masculinity ratio at birth since the beginning of the century may have been merely an accompaniment of an increase in these anthropological tendencies (due to an increase in religious fundamentalism?). Thirdly, the two anthropological tendencies may have received reinforcement from economic motives. NWFP shared particularly generously in the increase in the reported masculinity ratios at birth as already mentioned in section 1.3. Many valleys, as is well known in the NWFP, practice the dowry with the eventual claim on the resources of the family to be caused by a newly born girl infant.

The claim for dowry purposes on the resources of the family is only one part of the relevant anthropological situation. Others are: tradition of female infanticide in some parts of the subcontinent (e.g., Pakrasi 1970), tradition of female infanticide among pagan Arabs before 620 A.H., fear of disgrace due to eventual misconduct of the female infant, fear of disgrace if unable to marry off, hurt pride if marrying off beneath status, fear of ill-treatment after marriage, fear of social degradation if forced to marry wrong religion or wrong tribe (ibid., 17, 38). In such circumstances, some impact on the effective masculinity ratio at birth must be expected, even if the actual masculinity ratio at birth will be 1050. One does not need large scale killings. Mild neglect of 5 girls out of 100 will raise the masculinity ratio from 1050 to about 1100.

2.3 Female selectivity in mortality up to age forty is mild

In figure 1 we arrived at a "typical" set of masculinity ratios of a human population through averaging four populations selected for the quality of their data. Any other four populations with reliable data would give a similar average. This "typical" population has then been compared in figure 2 with the population of Pakistan at its various stages. The highest curve of masculinity ratios is probably the one for 1931, the time when women suffered most (or were concealed most through underenumeration), also the time when the high masculinity ratio at birth peaked as observed by Rukanuddin and already referred to earlier in section 1.3. The most recent distribution of 1981 is nearest to the European curve from figure 1. The intermediate curve between the two extremes shows the average for the intervening period.

One could conceptualize the development in the following manner: area marked C in figure 2 represents the benefit gained by women since 1931 till the

Fig. 1. Masculinity Ratios in Selected European Populations, 1981

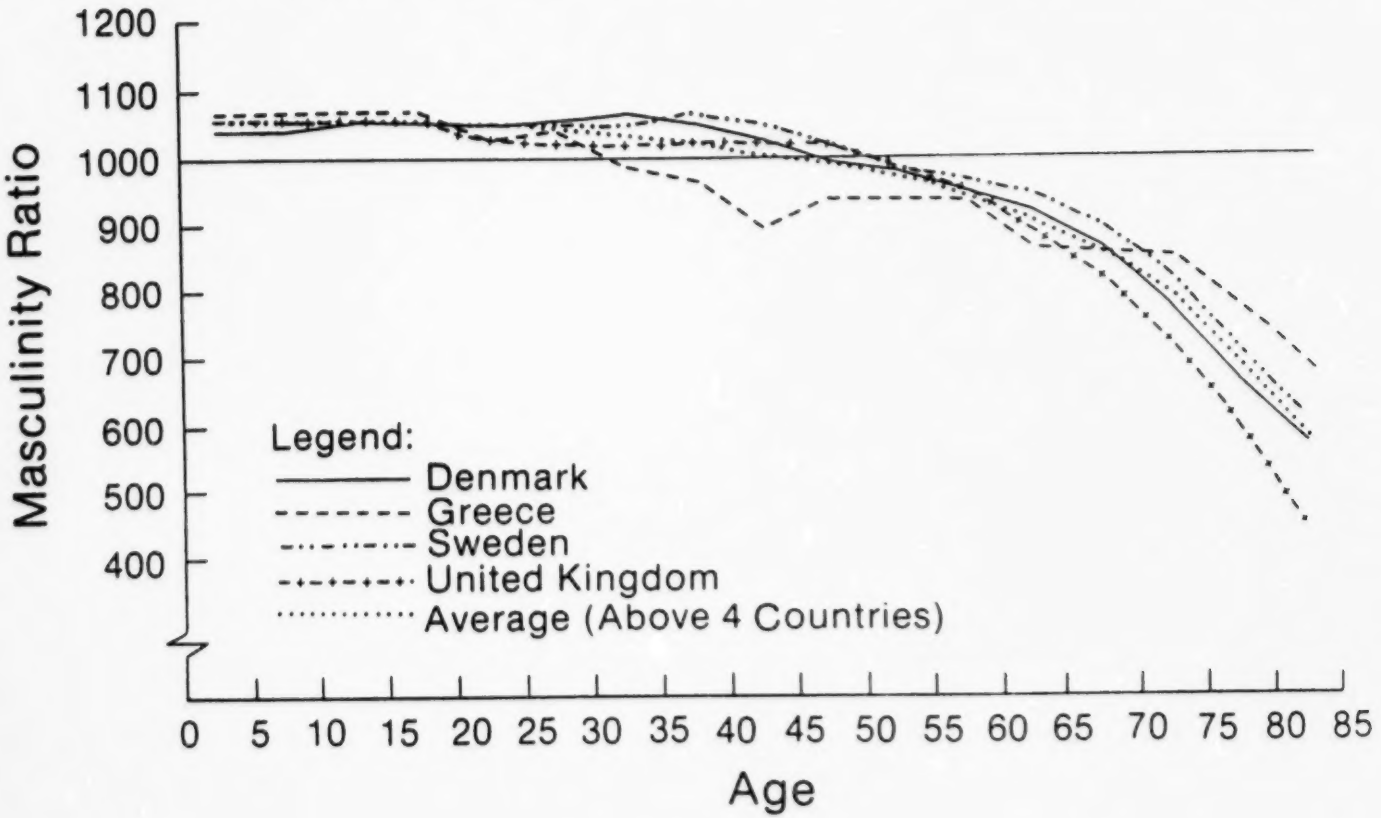
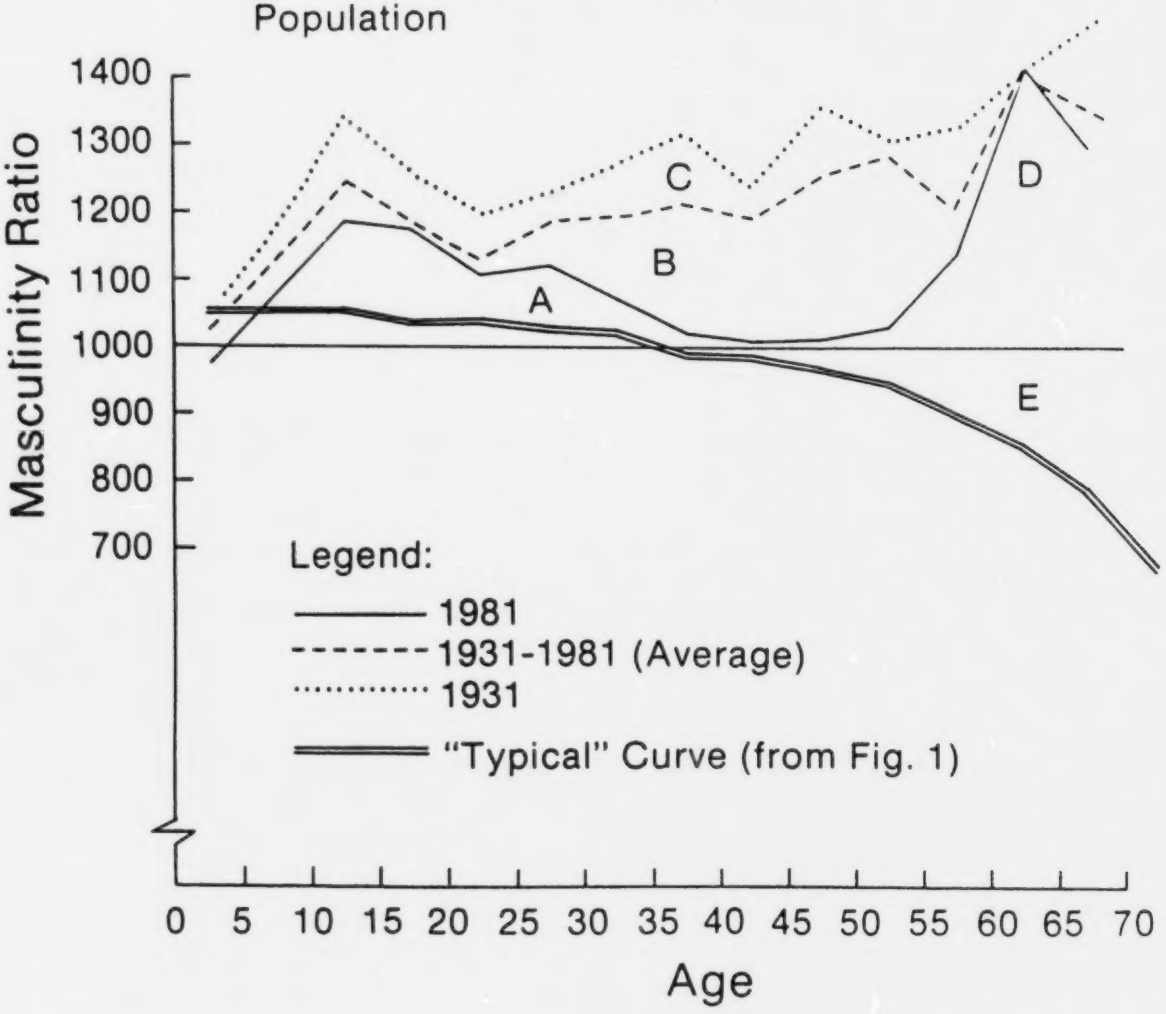


Fig. 2. Masculinity Ratios in Pakistan Compared with a "Typical" Population



average of the period. Area B symbolizes the gains since the middle of the period till 1981. Area A is the continuing price still being paid by women of Pakistan.

It is not necessary at this stage to stop and ask whether the swelling on the left of area A at ages 10–19 is the product of particularly severe female selective mortality or age specific underenumeration of females. If underenumerated and falling into the census net later on, they have been dealt with as areas F and G in figure 3.

2.4 Female mortality at older ages still discriminatory

Areas D and E in figure 2 continue showing the greatest discrepancy between Pakistan population and a typical population to the detriment of the older women of Pakistan as recently as 1981. We had an earlier confirmation of this discrimination in figure 3, where we saw the departure of the PGE curve from the Indian and European curves upwards. It will be recalled that this exercise was to show the position of women when their 1961 distributions were survived according to three regimes of mortality beginning with a masculinity ratio at birth of 1050. Through a study of table 7 an economic explanation suggests itself for this situation.

In table 7 are presented the labour force participation and unemployment by age and sex groups in 1981. The labour force participation of males follows the reverse U-shaped curve known from other societies. Some U-shaped reversal can be detected in the case of females as well (though none of the double humping experienced in some developed societies), but the more noticeable feature is the very low level of participation. It has been observed that in intensive surveys in Pakistan a much higher level of participation is reported (Shah 1982:509, e.g., in the NIS and PFS mentioned in table 2), close to 20 percent.

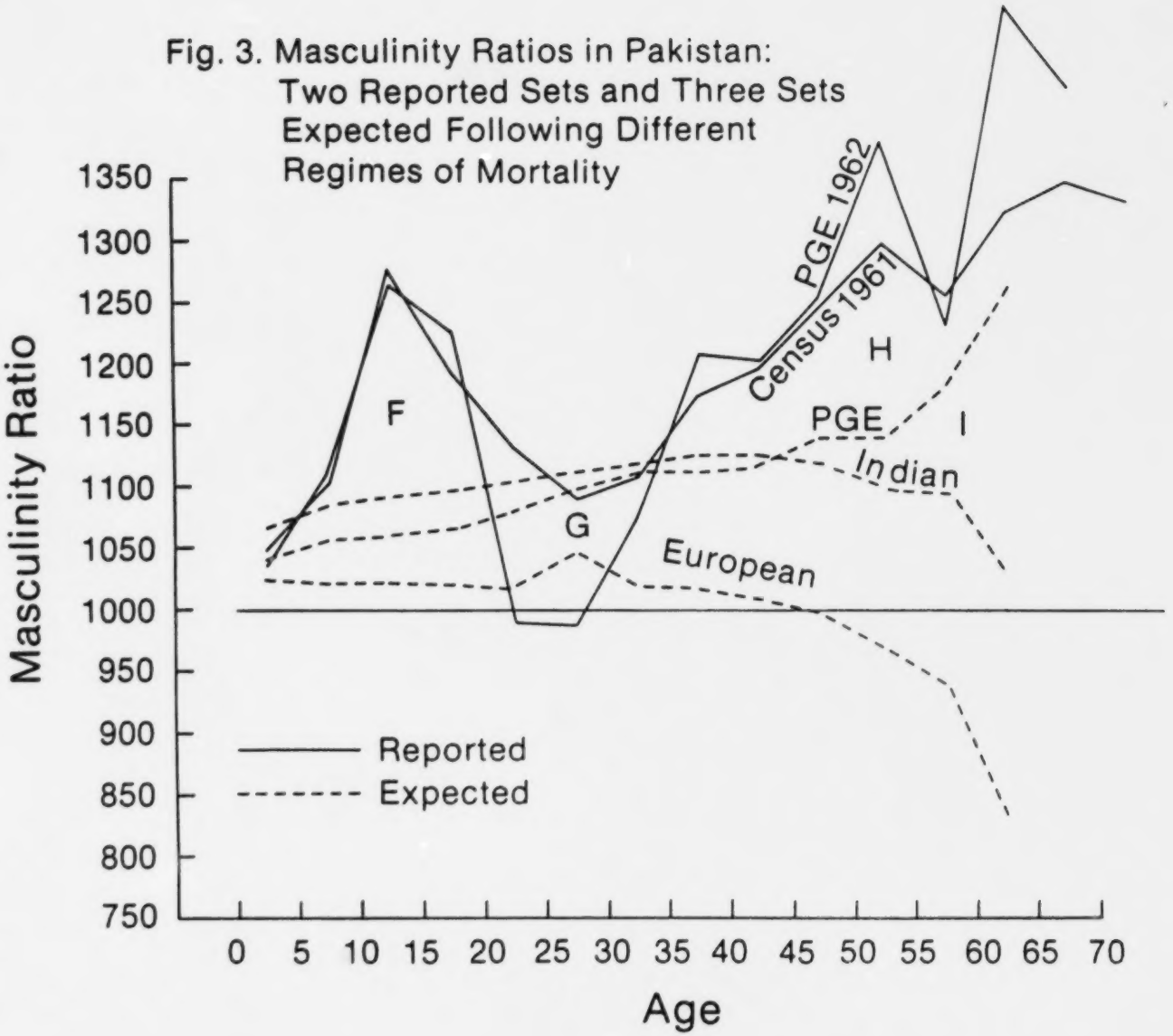


Fig. 3. Masculinity Ratios in Pakistan:
Two Reported Sets and Three Sets
Expected Following Different
Regimes of Mortality
Masculinity Ratio
1350
1300
1250
1200
1150
1100
1050
1000
950
900
850
800
750
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70
Age
PGE 1962
Census 1961
F
G
H
I
PGE
Indian
European
Reported
Expected

TABLE 7

Labour force participation and unemployment by age and sex
Pakistan 1981

	Persons in age-sex group	Working & looking for work	LFP (3) as % of (2)	Unempl. % of (3)
(1)	(2)	(3)	(4)	
Male	30,077,890	21,791,358	72.4	3.0
10-14	5,856,744	2,034,363	34.7	8.0
15-19	4,192,513	2,597,926	62.0	5.9
20-24	3,269,776	2,502,043	76.5	3.8
25-29	2,891,427	2,482,184	85.8	2.3
30-34	2,388,124	2,123,457	88.9	1.7
35-39	2,120,580	1,950,829	92.0	1.4
40-44	1,937,256	1,797,267	92.8	1.2
45-49	1,610,303	1,512,326	93.9	1.2
50-54	1,637,892	1,506,274	92.0	1.2
55-59	859,488	770,066	89.6	1.1
60+	3,313,787	2,507,623	75.7	1.7
Female	26,260,466	835,091	3.2	7.5
10-14	4,946,304	159,066	3.2	12.7
15-19	3,570,574	122,053	3.4	9.0
20-24	2,957,980	107,568	3.6	6.0
25-29	2,587,731	95,131	3.7	4.2
30-34	2,229,204	72,106	3.2	3.3
35-39	2,076,657	63,967	3.1	3.5
40-44	1,927,768	59,878	3.1	4.5
45-49	1,465,779	39,563	2.7	5.0
50-54	1,327,725	41,375	3.1	5.6
55-59	751,369	17,661	2.4	8.9
60+	2,419,875	56,723	2.3	15.8

Pakistan census 1981:82

Be that as it may, the reported unemployment of females is consistently higher at all ages than that of males, the U-shaped curves of the two sexes being particularly different at older ages. Do we have here the traces of an economic explanation of the high femininity ratio at death at older ages? Useless members of the society departing early? Are economics that powerful?

2.5 Masculinity ratio at birth, mother's age, birth parity

Table 8 gives the masculinity ratios of offsprings for mothers by their age at the time of reporting crossclassified by birth parity. For each age-group as well as for "all ages" the masculinity ratio increases with parity; for "all ages" the increase is completely monotonic, except for the dip at the highest parity "8 plus" (see figure 4). This monotonic increase is unnatural. With each parity women are older and should experience decreases in masculinity ratios, not increases. The male human is the weaker sex, even as a foetus, and with increasing age of the mother the male foetus is miscarried more often than its foetus-sister. This is how all human societies behave with regard to whom relevant data are available. Why is Pakistan different? Is it because Pakistani women like to remember the boys they have given birth to and omit to recall the girls? This forgetting is done on a massive scale: in the higher parities up to one third or more of the girls are forgotten.

Within each parity, the masculinity ratios tend to decrease with the reporting mother, as they should, for reasons explained earlier in this section, though there are some exceptions. Figure 5 should be studied and the reader should try to imagine the intricate fight between the biological tendency to have more and more girls with advancing age, and the socio-psychological tendency to forget girls and remember boys. In the column for "all parities" in table 8 we show a combined masculinity ratio for each age group repeated as the

TABLE 8

Masculinity ratio at birth by mother's age group at time of reporting and birth parity, Pakistan, HED 1973

Mother's age group	Birth parity								
	1	2	3	4	5	6	7	8+	All parities
All ages	867	987	1116	1273	1448	1530	1649	1498	1181
10 - 14	1198	500	-	-	-	-	-	-	2122
15 - 19	1065	1229	1303	1556	8522	1713	8682	2150	1133
20 - 24	1046	1154	1112	1001	1925	1138	1455	1024	1090
25 - 29	967	1124	1128	1245	1305	1180	1570	1222	1100
30 - 34	849	1068	1186	1214	1262	1224	1311	1018	1117
35 - 39	801	966	1120	1225	1390	1341	1411	1136	1138
40 - 44	767	908	1063	1293	1411	1422	1513	1377	1169
45 - 49	742	888	1071	1263	1425	1494	1598	1347	1180
50 - 54	719	915	1108	1327	1463	1524	1706	1559	1224
55 - 59	679	852	1144	1338	1596	1742	1736	1593	1262
60 Years	725	905	1117	1309	1574	1872	1942	1846	1275

Source: Derived from tables 8.1 and 8.2, Housing, Economic and Demographic Survey, 1973. Volume-II, Part I. Islamabad, Pakistan: Population Census Organisation

Fig. 4. Masculinity Ratios by Birth Parity and Age of Mother at Time of Reporting, Pakistan 1973

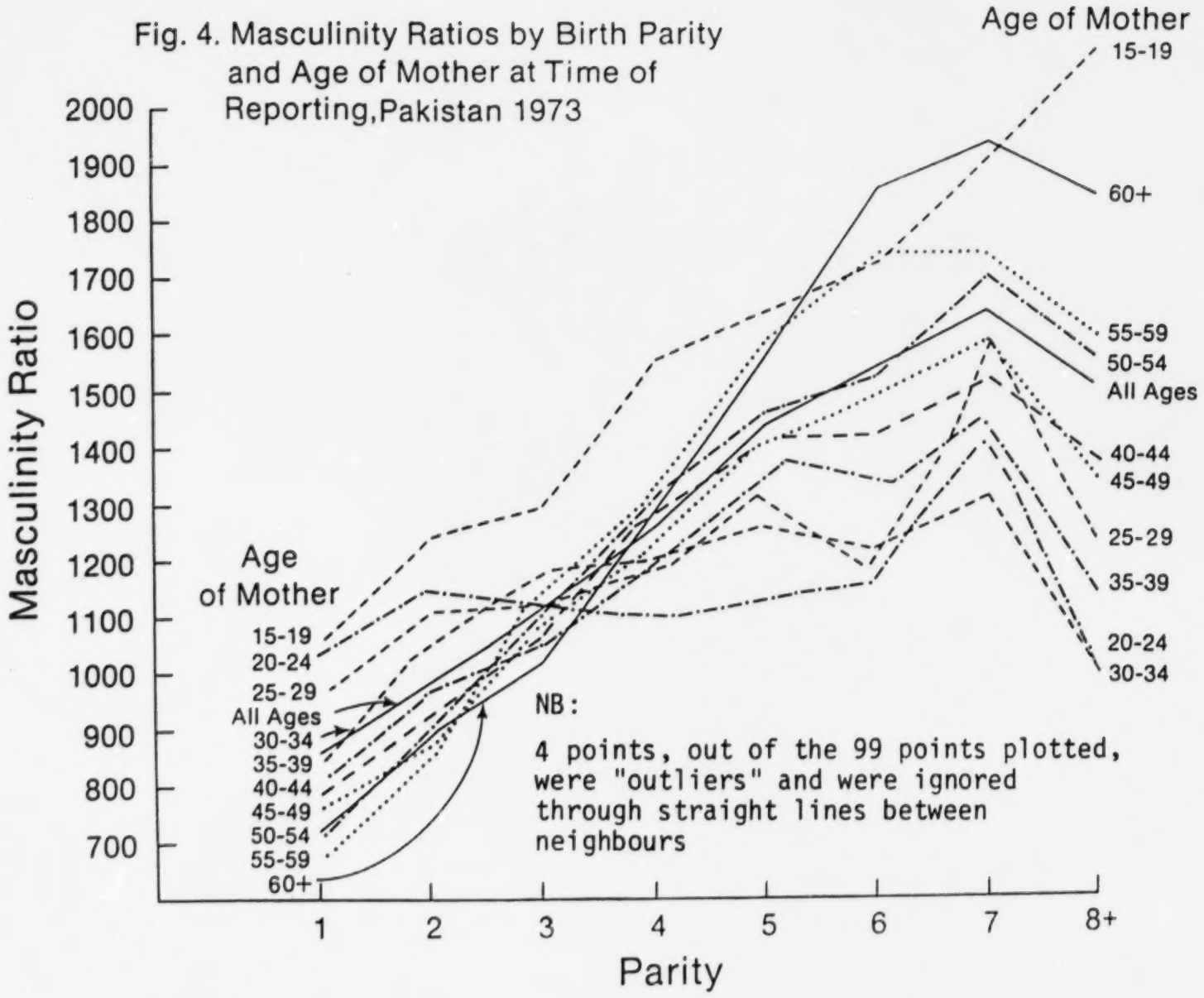
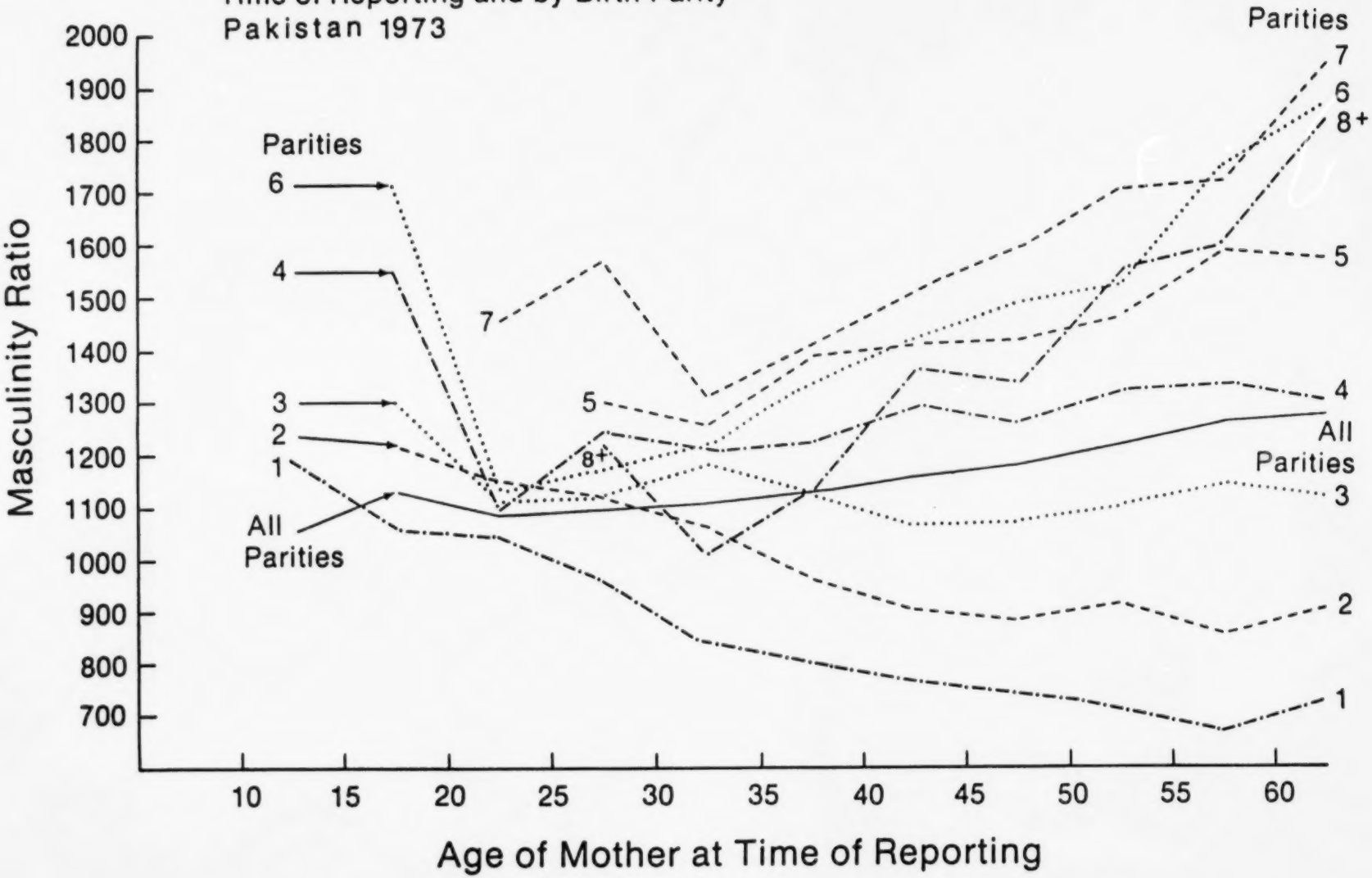


Fig. 5. Masculinity Ratios by Age of Mother at Time of Reporting and by Birth Parity Pakistan 1973



curve "all parties" in figure 5. It declines down to a low 1090 at ages 20–24 (in itself too high in comparison with other populations) in order to climb slowly, but monotonically to 1270 at age 60 plus. In other words, as long as women were still young and the event of birth or births were still fresh in their minds, they could not very well forget their daughters, but once they got older, above 24, the process of girl-infant-selective forgetfulness began, though boys were still being remembered. The curves of the first three parities, all mostly below the "all parities" curve, provide the suggestion for an interesting conclusion: as long as the number of children was small, it was difficult to forget the little girl (say "the only child" in the case of parity one), so much so that even older women reported their low child production in high feminities. If they had only one or two children, even if girls, that is all they had to remember. Once they had seven children, then it was possible and convenient to pretend that two thirds of them were boys.

The reader is invited to speculate on the dip in parity "8 plus" in figure 4. Why would all age groups remember more little girls at parity "8 plus" than they did at parity 7? So sure of themselves, because of the sizeable maternal production, that they did not have to pretend any more? Anything cabalistic about the figure 8, about the figure 9? A truncating point on the computer programme?

3.0 FROM THE MASCULINITY RATIOS TO THE SEX ROLES[13]

The title of this section is paraphrased from the title of a chapter, which developed a theoretical interpretation showing how sex ratios are linked to relationships between men and women, and the roles that they assume (Guttentag and Secord 1983:153–171). In its approach, the chapter is almost marxian, if not marxist, by suggesting that the demographic base, not unlike the economic

base in orthodox marxism, determines the sociocultural superstructure.[14] The conclusions of the chapter are not immediately applicable to a society like that of Pakistan, but an approach could be attempted with similar explanatory hopes.

3.1 Ages at which masculinity begins to hurt

Apart from the abberation at ages 10–14 (teenage marriagable daughters not reported to the census enumerator and tactfully not enquired about), the masculinity ratio does not really begin to rise until after the reproductive ages. In other words, the female selectivity in mortality becomes operative only on the other side of the marriage market, not at the entry to it. The marriage market is being reasonably well supplied with marriagable women, in fact so well that in 1975 during the PFS in three five year age groups (15–29) masculinity ratios of less than 1,000 were reported (table 2). Judging from the two sex frequency distributions (PFS 1975:A.I.3) we have a combination of improvements in female mortality (lessening of the impact of maternal mortality?) and the emigration of the corresponding male partners to the Gulf states, the United Kingdom and elsewhere.[15]

It will be recalled that respondents in the PFS were female and males depended on their reporting them for inclusion in the household questionnaire. Hence the low masculinity ratio of 1087 (table 2).

3.2 A marriage squeeze in Pakistan with a difference

The marriage squeeze used to describe a situation in Western type societies when marriagable women entered the marriage market as members of the first baby boom cohorts. There, they confronted their prospective partners, somewhat older men born into the previous cohorts, which were somewhat smaller than the baby boom cohorts (Akers 1967; Guttentag and Secord 1983:176). In Pakistan a

marriage squeeze may develop in the opposite direction. The reported, delayed age at marriage occurring in Pakistan could become one of the factors lowering fertility. Then, women growing out of such smaller baby cohorts and arriving on the marriage market will find an abundance of potential marriage partners in the somewhat older partners who were members of the somewhat older and larger cohorts.

It is conceivable, of course, that the continued emigration of men and the lessening of female selectivity in mortality would counteract this baby bust development. The lessening of the incidence of polygyny would work in the same direction (Grossbard 1980), though the potential for this development seems to be small in view of the apparent unimportance of polygyny in Pakistan. Narrowing of the difference in ages of brides and bridegrooms, wide now by western standards, and increase at age of first marriage by brides, still low by developed countries standards, would work in the opposite direction. It is impossible to say how on balance these differences would work out, but in each case the economic demand-supply analysis would be helpful in discerning the future position of women in Pakistan and consequently that part of fertility performance that depends on the relative position of women.

Briefly, on purely economic calculus women are disadvantaged by their early maturity and consequent early entry onto the marriage market. From the same standpoint polygyny is "good" for them, as is their prospective later marriage and men early marriage. It remains to be determined whether the anthropological and sociopsychological disadvantage of the existence of polygyny in a society can be compared with the demand-supply advantage of the impact of polygyny on the marriage market.

Assuming that the marriage squeeze against men does develop as envisaged, profound societal changes would take place. As an example, the market forces of

demand and supply would ensure a change from the practice of dowry (endowments brought by the bride to the new home) to dower (bride price). It has already been shown that the masculinity ratio at birth in the valleys of the NWFP are low where the practice of dower prevails, and high with dowry.[16]

3.3 Ideal masculinity ratios in their thousands

Masculinity ratios among the highest in the world were reported from the Indo-Pakistan subcontinent (Williamson 1976:81), comparable only to attitudes in rural Egypt and rural Algeria (ibid. 88); these were given in answers to attitudinal questions and as an ideal, say, 5000 men were wished for each 1000 women. The preference for male offspring in many societies, including that of Pakistan, is well-known and documented. "No son begets many daughters", Wyon and Gordon (1971:84) quote a Punjabi proverb. We do not know objectively what is the cost to Pakistani girls of being born into a society which prefers boys, and it remains to be seen whether the marxian-life power of demography will be strong enough to overwhelm the long standing attitudes.[17]

Attitudes do change.[18] There was a time in the Western world when the loss of a woman's chastity, through rape or otherwise, damaged the father's or brother's honour (The London Feminist History Group 1983:23) and that was the chief societal concern rather than the feelings and personality of the victim. The attitude was one concerned with the protection of male property (ibid. 30), but with time rape came to be seen as a crime against the person, not the crime against property (ibid. 41).

In recent years subjects for debate and discussion have been raised in Bangladesh that are "virtually tabu in polite society" (Maloney et al. 1981:224). Infanticide in pre-partition India, especially in the Punjab was widespread and reported by British travellers in the 18th and 19th centuries

(ibid. 223; Pakrasi, 1970), but recent impressionistic surveys among informed respondents suggested that "contrary to popular assumption, ... data do not show that girl babies are preferentially killed" (Maloney et al. 1984:222). Illegitimacy is morally heinous because of religion, but infanticide in Pakistan is still more morally heinous, where "moral issues and pride are even more highly idealized" (ibid. 222).

3.4 Shortage of women turning into a surplus

Polygyny, while societally acceptable as well as religiously, was never an important feature demographically in the Pakistani society, presumably because of a shortage of women. This shortage was somewhat alleviated by the early age at marriage of women, late in the case of men. Pakistan then did not choose the way of, say, some African societies where polygyny was highly and positively correlated with the difference in mean husband's and wife's age at marriage (Brass et al. 1968 cited in Grossbard 1980:334).

Now, the shortage of women in Pakistan is likely to turn into a surplus: improved female mortality relatively to males, particularly at early childbearing ages, later age at marriage for brides (and earlier for bridegrooms), decline in polygyny, etc. Such a decline, it must be stressed, is an economic disadvantage to females, because it increases the number of women on the marriage market (Grossbard 1980). Demographic analysis is not powerful enough, in fact it has no objective means to say how and when the Pakistani society will begin breathing fully with both lungs, male and female, but it can signal that strong demographic forces are developing, likely to affect the society in a profound manner. Some of them point in one direction: the strengthening of the women's position (e.g., preventing the youngest cohorts from entering the marriage market). Others point in the opposite direction: weakening the women's position (e.g., female selective mortality no longer

removing early large segments of women from the marriage market as well as other markets). It is impossible to say on balance what the outcome will be and which of the countervailing forces will win. As an example, the female selective mortality was particularly severe beyond the reproductive ages. Thus, any further improvements will affect women beyond the reproductive ages without immediate relevance to the marriage market. Yet, it is difficult to accept in one's sociopsychological thinking the economic conclusion that women will be disadvantaged when their relative numbers increase because of improved health.

ENDNOTES

* S.M. Shafiqul Islam, a graduate student at the University of Alberta provided research assistance for the production of some of the tables and graphs. Hassan Akthar Khan and G. Mujtaba Mirza, the previous and current Census Commissioners respectively, offered advice and opened the facilities of their departments at an early stage of preparations for this paper. The usual disclaimers of responsibilities for errors prevail.

1 Thus, it will be understood that it is the sex ratios that increase or decrease interchangeably and their message is ambiguous. On the other hand, the message of the masculinity ratio or the femininity ratio is unambiguous. With, say, more men the masculinity ratio increases and the feminity ratio decreases. The sex ratio continues to be misused through a mixture of ethnocentricity and sloppy thinking; an expression similar to the misuse of fertility in place of fecundity and fecundity in place of fertility for the last 60 years. These two expressions carry in English the exact opposite from the correct useage.

2 The obvious fact that in considerations of nuptiality the appropriate age groups have to be taken into account is apparently not understood by demographers, particularly in neutral countries, who during or after each major war detect the hand of Providence in an increasing masculinity ratio at birth. As if widows and ageing spinsters in the marriage markets could be consoled by the just born suckling baby-infants. The grain of fact in this fantasy could be a higher proportion of male births due to wartime phenomena: earlier childbearing due to snap marriages and increased birth interval due to husband absences, both resulting in fewer foetal losses (Panunzio 1943; Markle 1974).

3 The Supreme Court of the USA ruled over the last few years several times (finally and conclusively in 1983), that the one sex life tables, so-called unisex life tables, (Krotki 1976; Cohen 1986) fall foul of anti-discrimination legislation. Thus, under pension plans that are actuarially sound and funded, retirement payments to males are less than they would be, if females had a separate pension plan.

4 The black population of the USA and some tribes on the western coast of Africa, both possibly sharing similar genes; though in the case of the U.S. blacks another influence is probably present: low socioeconomic status resulting in male foeti losses and consequently low reported masculinity ratio at birth (Petersen 1975:67).

5 As will become obvious in subsequent discussion, it is particularly ironic that 0-4 in 1981 should show a masculinity ratio below 1000, because 0-4 is one of the two or three age groups where there could be more males than females on account of the high masculinity ratio at birth.

6 We dwell on this point at some detail, because age group 5–9 has long been a problem in Pakistan. In census age pyramid after census age pyramid it sticks out beyond age group 0–4 like a sore thumb. This leads to much unhappiness among demographic analysts and to much inconclusive analysis: if real, then severe underenumeration at ages 0–4, very high birth rate, very high death rate; if age misstated at the expense of 0–4, then lower fertility, lower mortality.

7 Some writers, find it difficult to accept the possibility of underenumeration (e.g., Alam and Shah 1983:72). It has been suggested that the missing 20 percent of women aged 10–14 have been in fact misplaced into neighbouring age groups. They would thus give for any census a more normal age distribution. At any one census the choice between underenumeration and age misstatement can sometimes be made by reference to single age distribution, eg., a lot of missing 9-s and 11-s could be traced to heapeed 10-s. Sometimes the choice is not that easy, when neighbouring age groups look pretty abnormal themselves without these new additions. At the next census, ten years later the same question arises: why the continuing abnormality.

8 Rukanuddin chose the alternative explanation of underenumeration rather than excessive mortality (1967:204). He shaded the areas called H and I on our figure 3 and estimated that it meant an underenumeration of 677,000 women (ibid.:212) aged 35 plus. We think of them as victims of excessive mortality.

9 A cursorry look at six PGS reports (cited among references as PGS I and PGS II) confirms that in all six years the two masculinity ratios are above 1000.

10 This writer should have remembered a similar experience from Sudan. In his capacity as Census Controller of the First Population Census of Sudan, he found incongruous CBR's of the order of 20 or less from two census areas along the Uganda border, although visibly teaming with children. The census in the two areas was cancelled and redone under the personal supervision of the Chief Field Inspector. In place of the expected CBR of 50, possibly 45, 90 and 110 had been obtained. Obviously CBR's of 20 and 100 were reflection not of the local demography, but field methodology.

11 Coverage is the intended population or area for inclusioin in the census or survey; completeness is the success with which the coverage has been achieved.

12 Apparently contradictory reporting on this subcontinent has a history. In an area with particularly heavy and well documented female infanticide the masculinity ratio of one surviving population was 4204, at ages 0–4: 1283 (Pakrasi 1970:179). Deaths reported among males were 147 and females 47 giving crude death rates of 26 and 34 respectively. Each item separately looks contradictory, but together they are reasonably consistent, though the difference between 26 and 34 was not big enough to move from 1283 to 4204. Female selective forgetfulness again?

13 Sex roles is one of the key expressions used frequently by sociologists in their analyses; it is to them an everyday tool like, say, elasticity is to economists.

14 Marxist relates to the belief akin to religion. Marxian means a useful use of the theory without ideological servitude and subservience.

15 It remains to be seen whether the sex imbalances in emigration will continue. History knows many examples of sex imbalanced migrations, particularly among emigrations of South Asians that were eventually balanced (Anon 1985:6 and 38).

16 At the time of writing this paper, the complete bibliographic reference is not yet at hand. It was a book published about 1962 by the Peshawar Rural Academy and written by K. Ashraf (?).

17 It is understood that Mehtab S. Karim of the University of Karachi was working in the summer of 1985 on the analysis of sex preferences for offsprings from recent survey data (see also: Williamson 1976:87).

18 For Hindu strains, generally of a restrictive kind, in the Muslim-cultured attitude towards women in Pakistan see Shah 1983:25-28.

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